

# Automobile Engineering

FOR REPAIR MEN, CHAUFFEURS, AND OWNERS; COVERING THE CONSTRUCTION,  
CARE, AND REPAIR OF PLEASURE CARS, COMMERCIAL CARS, AND  
MOTORCYCLES, WITH ESPECIAL ATTENTION TO IGNITION,  
STARTING, AND LIGHTING SYSTEMS, GARAGE DESIGN  
AND EQUIPMENT, WELDING, AND OTHER  
REPAIR METHODS

AUTOMOBILE EXPERTS, CONSULTING ENGINEERS, AND DESIGNERS OF THE  
HIGHEST PROFESSIONAL STANDING

SIX VOLUMES

AMERICAN TECHNICAL SOCIETY  
CHICAGO  
1920

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*Four-Cylinder.* The Henderson Motorcycle Company, of Detroit, has been the successful champion of the four-cylinder design, Fig. 13. These engines are air cooled and have a bore of  $2\frac{1}{2}$  inches and a stroke of 3 inches, giving a piston displacement of 58.9 cubic inches. The Henderson has been on the market for several years, and the construction in the past has included a bevel gear at the rear of the crankshaft, which drove through a chain to a planetary two-speed transmission incorporated in the rear hub. For the coming season,

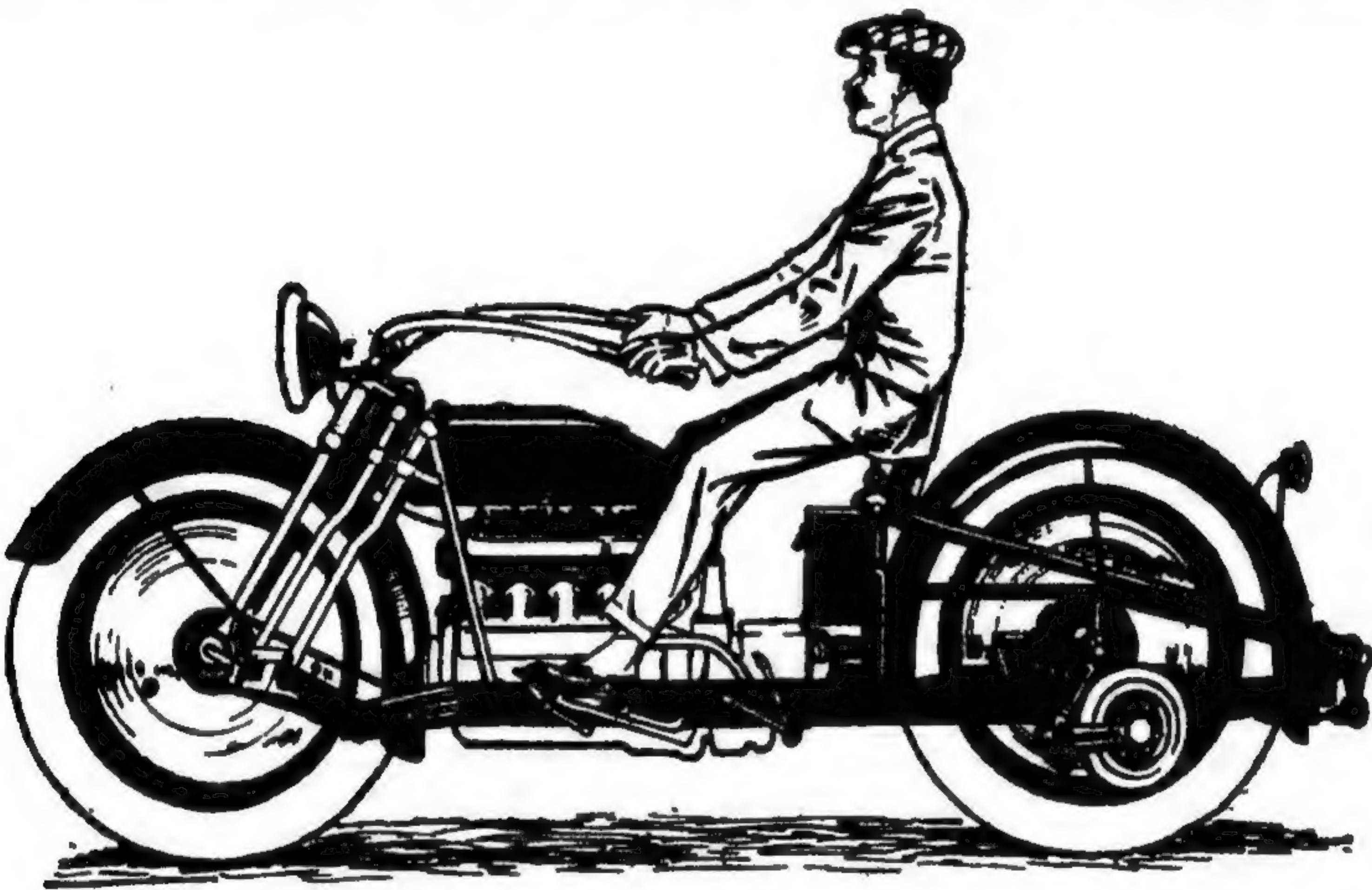


Fig. 14. Side View of Militaire Four-Cylinder Motorcycle  
Courtesy, J. Militaire Motor Vehicle Company, Buffalo, New York

this construction has been replaced by a three-speed sliding gear at the rear of the crankshaft, with a chain drive back to the standard types of hub and band brakes. One of the features of the four-cylinder machine is its very rapid acceleration, which makes it very easy to handle in traffic—excellent for police-department work.

Another four-cylinder machine, the Militaire, has recently been announced, which is illustrated in Fig. 14. This carries an engine of  $2\frac{1}{8}$ -inch bore and 3-inch stroke, with a piston displacement of 68 cubic inches. The specifications list such unusual features as a selective sliding-gear shaft having three speeds forward and a reverse, which forms a unit with the engine. The drive is by propeller shaft,



## MOTORCYCLES

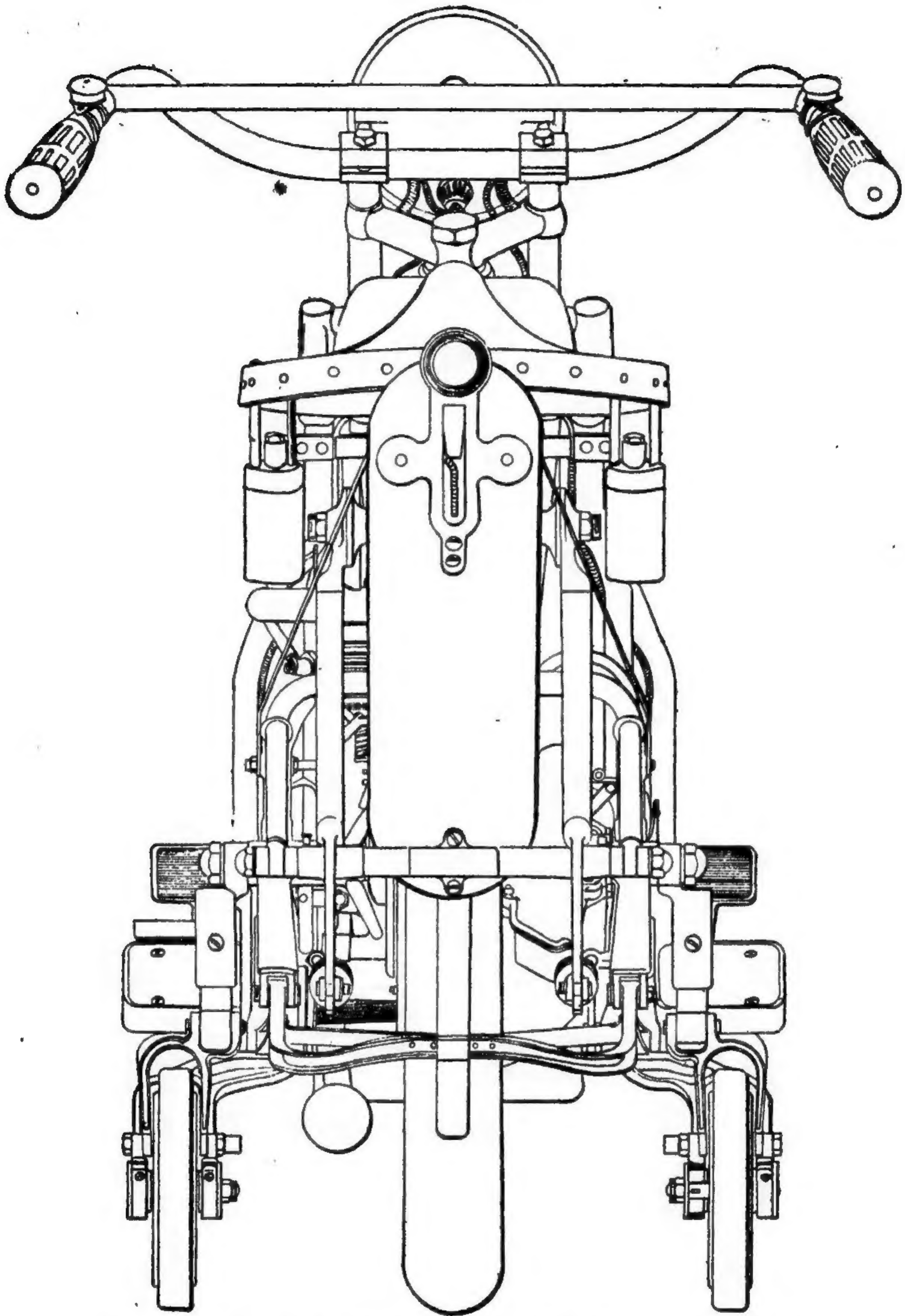


Fig. 15. Rear View of Militaire Motorcycle, Showing Auxiliary Wheels in Position for Supporting Motorcycle

*Courtesy of Militaire Motor Vehicle Company, Buffalo, New York*

and the wheels are of artillery rather than wire type. In Fig. 15 it will be noted that there are two auxiliary wheels which swing up off the ground; in their normal position, they lie at each side of

the rear wheel. These auxiliary wheels are lowered, as shown in the figure, when the machine is left standing or when it is driven in very slow heavy traffic where the motorcyclist so often has to drag his feet upon the ground.